MONTHLY WEATHER REVIEW.

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INTRODUCTION.

The MONTHLY WEATHER REVIEW for July, 1902, is based on reports from about 3,100 stations furnished by employees and voluntary observers, classified as follows: Regular stations of the Weather Bureau, 160; West Indian service stations, 17; special river stations, 132; special rainfall stations, 48; voluntary observers of the Weather Bureau, 2,562; Army post hospital reports, 18; United States Life-Saving Service, 9; Southern Pacific Company, 96; Hawaiian Government Survey, 75; Canadian Meteorological Service, 33; Jamaica Weather Office, 130; Mexican Telegraph Service, 20; Mexican voluntary stations, 7; Mexican Telegraph Company, 3; Costa Rican Service, 7. International simultaneous observations are received from a few stations and used, together with trustworthy newspaper extracts and special reports.

Special acknowledgment is made of the hearty cooperation of Prof. R. F. Stupart, Director of the Meteorological Service of the Dominion of Canada; Mr. Curtis J. Lyons, Meteorologist to the Hawaiian Government Survey, Honolulu; Señor Manuel E. Pastrana, Director of the Central Meteorological and Magnetic Observatory of Mexico; Camilo A. Gonzales, Director-General of Mexican Telegraphs; Capt. S. I. Kimball, Superintendent of the United States Life-Saving Service; Lieut. Commander W. H. H. Southerland, Hydrographer, United States Navy; H. Pittier, Director of the Physico-Geographic Institute, San Jose, Costa Rica; Capt. François S. Chaves, Director of the Meteorological Observatory, Ponta Delgada, St. Michaels, Azores; W. M. Shaw, Esq. Secretary, Meteorological Office, London; and Rev. Josef Algué, S. J., Director, Philippine Weather Service.

Attention is called to the fact that the clocks and self-registers at regular Weather Bureau stations are all set to seventy-fifth meridian or eastern standard time, which is exactly five hours behind Greenwich time; as far as practicable, only this standard of time is used in the text of the REVIEW, since all Weather Bureau observations are required to be taken and recorded by it. The standards used by the public in the United States and Canada and by the voluntary observers are believed to conform generally to the modern international system of standard meridians, one hour apart, beginning with Greenwich. The Hawaiian standard meridian is 157° 30′, or $10^h\ 30^m$ west of Greenwich. The Costa Rican standard of time is that of San Jose, $0^h\ 36^m\ 13^s$ slower than seventy-fifth meridian time, corresponding to $5^h\ 36^m$ west of Greenwich. Records of miscellaneous phenomena that are reported occasionally in other standards of time by voluntary observers or newspaper correspondents are sometimes corrected to agree with the eastern standard; otherwise, the local standard is mentioned.

Barometric pressures, whether "station pressures" or "sea-level pressures," are now reduced to standard gravity, so that they express pressure in a standard system of absolute measures.

FORECASTS AND WARNINGS.

By Prof. E. B. GARRIOTT, in charge of Forecast Division.

North Atlantic weather was seasonable and no special storm warnings were required.

In the United States the month was characterized by low average temperatures and excessive rainfalls in the northern and by prevailing dry and warm weather in the southern districts. In the first decade of the month heavy rains caused floods in Iowa and the Mississippi River rose above its banks between southern Iowa and Illinois. In the third decade heavy rains resulted in destructive floods in Texas. The usual flood warnings were given timely distribution in the flooded districts. In the first and second decades of the month destructive rains occurred in the Genessee Valley, New York.

The unseasonable weather of July in the northern part of the United States was associated with a rapid succession of areas of low barometric pressure that crossed the northern districts east of the Rocky Mountains. These areas were attended by heavy local rains that were accompanied by sudden and marked falls in temperature. During the periods of fair weather that alternated with the cloudy areas the maximum temperatures were high, but the average of the minimum and maximum temperatures furnished a monthly mean that corresponded closely to the average temperature for July. The apparent average coolness of the month in the northern districts was therefore due to the fact that the periods of high temperature while frequent were of short duration.

CHICAGO FORECAST DISTRICT.

Storm warnings displayed on the upper lakes on the 16th were justified.

Thunderstorms and heavy showers were exceptionally frequent in the Missouri and upper Mississippi valleys and the Lake region during the first and second decades of the month.—*F. J. Walz, Inspector.*

NEW ORLEANS FORECAST DISTRICT.

No storm warnings were required during the month. The frequent and heavy showers in Texas during the last ten days of the month were accurately forecast.—*I. M. Cline, Forecast Official.*

DENVER FORECAST DISTRICT.

No special warnings were issued during the month.—*F. H. Brandenburg, Forecast Official.*